



**Food Safety**  
practices in preparing  
and cooking a hāngi

He whakatairanga i ngā  
ahuatanga mahi mo te  
tunu hāngi



# Mihi

Korōria ki te Atua i runga rawa  
He maungārongo ki te mata  
o te whenua  
tāngata katoa

Ngā tini mate hoki o ngā  
Marae puta noa i te motu  
Haere koutou, haere  
Haere ki te Matua nui i te Rangi  
Ki te kainga tūturu anō hoki,  
mo tātou, mo te tangata

Rātou te hunga wairua ki a rātou  
Tātou te hunga ora ki a tātou

Tihei mauri ora!

E ngā iwi, e ngā reo, e ngā mana  
Tēnā koutou katoa

Ko ēnei tuhinga kōrero e pā ana ki ngā tikanga mo te hāngi,  
ka tukua atu hei taonga mo ngā hau e whā

No reira, ma te Atua koutou, e tiaki, e manaaki  
Huri noa, huri noa

Tēnā koutou, tēnā koutou, tēnā anō tātou katoa

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Orakei Marae hāngi pit overlooking the entrance to Waitemata Harbour and Rangitoto Island

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Cover image Tumutumu Whenua - Te Whare Tupuna, Ngāti Whātua ki Orakei

## Foreword Kupu whakataki

In July 1997 a local GP notified Auckland Healthcare Public Health Protection of a gastroenteritis case. The patient had attended a hui in Auckland hours before becoming unwell. Investigations by public health staff found that an additional 63 people, who had attended the same hui, also suffered symptoms of gastroenteritis.

The food team at Auckland Public Health surveyed the hui participants and identified the roast pork as the most likely source of infection. A review of the preparation and cooking of the pork identified a number of problems which could have caused the foodborne illness outbreak. The home-killed, uninspected pork had been put in a chilly bin without icepacks and driven for five hours from Kaitaia to Auckland, which would have allowed bugs to grow to dangerous levels. The temperature of the meat hadn't been monitored during cooking so it is not known if the cooking would have killed the bugs. Lastly, the cooked meat was allowed to sit at room temperature for a couple of hours, again allowing bugs to grow. Along with these process problems there were also issues with the supporting systems in the marae kitchen. There were limited systems in place with regards to cleaning and cross contamination between raw and cooked foods.

Between 1998 and October 2001 *A Food Safety Promotion Programme for Auckland Maori*, was developed and released for consultation by Dr Rhys Jones, Public Health Medicine Registrar for the food safety team of the Auckland Regional Public Health Service.

Further discussion continued until, following consultation with Kaumātua at Orakei Marae, a hui was called for the Food Safety, Nutrition and Physical Activity teams of the Auckland Regional Public Health Service to observe food safety practices utilising the principles of HACCP (Hazard Analysis and Critical Control Point) while preparing a hāngi.

From a cultural perspective the Food teams were afforded a full powhiri which incorporated the protocols of tikanga for manuhiri/visitors onto the Marae. The powhiri included a Karanga, Karakia, Whaikorero, Waiata, and Hariru. On completion of the rituals of encounter the visitors were given a presentation on the history of the Marae and invited to share in the evening meal; after which began the initial preparations for the hāngi.

The result of that hui is this document which aims to guide anyone involved in preparing hāngi on keeping it safe. It covers all the aspects of a hāngi and describes how each step should be managed to achieve a safe outcome. This is not a guide on how to cook a hāngi, but **how to do it safely**.

This guide has been developed for hāngi which are prepared on the Marae or at home and are not sold. If you are interested in selling hāngi, then there are further requirements that you need to be aware of. Please contact your local Health Protection Officer for more information (see page 22).

**Raniera Bassett** August 2004  
Adviser (Special Programmes) NZFSA

# Whakatauki

**“Ma te tika o muri, ka tika a mua”**

“It is only through the efforts  
of those who work out the back,  
will the front flourish”



## Historical Reflection He tirohanga whakamuri:

Tangata whenua have always maintained traditional values of food safety and food preparation practices, which emphasised a number of effective control points, pertaining to tikanga Maori protocols.

The knowledge and history of traditional food sources, food safety and personal hygiene practices were placed and vested with ngā kaitiaki (guardians - certain people within the whānau, hapū or iwi designated to maintain the sanctity of kai) on behalf of the iwi for its survival.

Before the introduction of the Gregorian Calendar to Aotearoa/NZ, Maori had developed a system that utilised the wind, tide, moon, stars, and clouds to determine the time to gather food resources. With the ability to judge the seasons, Maori were able to gather food and shellfish in season. For example, it is said, "when the pohutukawa trees are flowering, the kina are fat". To add to this, whenever a hui was held at a Marae, only enough kai was gathered for the purpose of that particular hui. To safeguard and to control seafood stocks from being over fished, this practice was stringently observed by Mana Whenua (local Iwi), especially when gathering kaimoana.

Also, gathering just enough food for a hui alleviated the problem of having too much leftover food. Maori from a very early age were taught only to take enough to feed one's whānau. As different types of food would only be in season at certain periods of the year, this allowed time for food resources to replenish.

Another practice that helped to ensure seafood resources were maintained was the ritual of giving the first fish, kina, paua etc of a catch back to the sea. The significance of this ritual held spiritual connotations for Maori as well as conservation aspects. Spiritually it was a way of giving thanks to Tangaroa, the god of the sea. From a conservationist perspective, it ensured that breeding stock and gravid fish were not taken.

There were also protocols in place to monitor the control of waste from shellfish, e.g. it was prohibited to shell, prepare or eat pipi, mussel, kina, and fish in gathering areas or on the beach.

As far as human waste was concerned, all traditional food gathering areas, the sea, shellfish beds, rivers and lakes, were regarded as tapu. When a Marae was built, areas for preparing and storing food and eliminating human waste were stationed away from food gathering grounds. This reduced the possibility of contamination from human waste and refuse etc.

On reflection, Maori were very aware of how important it was that tikanga protocols on a Marae were adhered to. Personal hygiene and the sanctity of food, which encompassed these protocols, were paramount. Cleanliness was a must!

Today many of the traditions that were valued highly back then have diminished. There are many reasons for this. However, it is likely that one reason was due to many Maori moving from rural areas to the cities in the 1950s up until the 1970s to find employment. When this migration took place, they left many of their traditions behind.

With this in mind, some of the values that were prevalent in a rural setting sometimes did not apply in an urban context. This is why education on food safety practices is essential.

# Food Safety on the Marae

## Ngā tikanga e pā ana ki te kai mo te marae

### Placement of Hāngi Pit

Correct placement of the hāngi pit is essential. Refer to local Council regulations for specific local requirements.

The pit should be:

- at least three metres away from the property boundary or any other building or structure;
- away from septic tank outflows;
- away from drains and ground water;
- away from dry foliage that could start a scrub fire.

### Equipment required:

- **Hāngi stones/iron bars**

The volume of hāngi stones/iron bars is dependent on how many hāngi baskets will be used and this is determined by the expected number of people - (for more guidance on determining volume see also page 13).

When using river stones or scoria rocks select them as follows:

- **Selection of hāngi stones**

River stones and scoria rocks tend to explode when excessively heated. Stones and scoria rocks that do not explode are chosen for hāngi use because they can hold extreme heat. To decide which stones to use, fire the stones as you would for a hāngi prior to use (24 hours or more so stones can cool again before being used).

Iron bars do not run the risk of explosion and also hold heat for long periods of time.

- **Firewood**

It is advisable to use slow burning wood e.g. mānuka. The amount of wood is dependent on how many hāngi baskets will be used and this is determined by the expected number attending. Generally, burning the wood for three hours is sufficient burning time to heat the stones/iron bars. Never use treated timber.

- **Hāngi baskets**

Line the baskets with tinfoil before food is placed in them and cover with tinfoil before cooking, so food does not come into direct contact with the soil or rocks/iron bars.

- **Spade(s)**
- **Shovel(s)**
- **Rake(s)**
- **Axe(s)**
- **Large Plastic container(s)** as required (to soak sacks in water)
- **Large white cloth sheet(s)** (not bed linen) as required to cover hāngi kai
- **Sacks** to cover sheets
- **Tarpaulin** to cover sheets and sacks
- **Heavy duty gloves** enough for all hāngi workers to protect hands when lifting baskets out of hāngi pit
- **Long garden hose** situated near hāngi pit
- **Bucket(s)** as required for extra water.

# Practical Guidelines in Preparing and Cooking a Hāngi

## He mahinga arataki mo te whakareri me te tunu hāngi

### Purchasing Food Items

#### Te hoko i ngā kai

**Purchase supplies from registered food premises or from businesses with a New Zealand Food Safety Authority approved programme.** This will help to ensure that you are buying safe or suitable food, e.g. all meat has been properly slaughtered, inspected, processed, packaged and labelled.

When transporting perishable food such as meat and dairy products, it is recommended that these items are stored in chilly bins, or use a refrigerated vehicle if transporting perishable food in bulk.

**This is to prevent the bacteria that could lead to foodborne illness from multiplying.**

**Harvest shellfish only from growing areas approved by your local Council. This will help ensure that the shellfish is free from harmful toxins, viruses and bacteria.**





## Food Storage Te whakaputu o te kai

Ensure fridges are operating at a temperature of between 0 and 4°C and the freezer temperature is set at -18°C so that food is frozen solid. A thermometer can be purchased at a hardware store.

Keep raw meats and poultry covered in the bottom of the fridge to ensure their juices don't drip onto other food.



Keep all perishable foods covered in the fridge ready for use – **this is to prevent the transfer of bacteria from raw food to ready-to-eat foods.**

Keep shelf stable foods covered and away from chemicals. Rotate stock – i.e. use older food first.



## Food Preparation Te taka kai

Ensure proper washing and drying of hands before handling food and after handling raw food – **this is to prevent bacteria being transferred from unclean hands onto cooked or ready-to-eat foods.**

**Wash your hands** - Horoia o ringaringa!

- **Always wash your hands with soap and warm water for 20 seconds:**
  - before you start preparing food
  - after handling rubbish
  - after smoking
  - after visiting the toilet
  - after handling raw food especially meats or poultry.
- **Always dry your hands thoroughly for 20 seconds.**
- **A nail brush should be used to remove dirt or build up of food from under finger nails.**
- **Don't wear jewellery, other than a plain wedding band, on your hands during food preparation.** Jewellery can provide a home for bugs which cannot be effectively cleaned during hand washing.
- **People who have suffered from diarrhoea or vomiting, or have been looking after someone else, e.g. a child, with these symptoms in the last 24 hours should not prepare food for others.**



## Food Preparation Te taka kai

Use separate areas for preparing raw food and cooked, ready-to-eat food where possible.



Scrub bench surfaces, knives and cutting boards with hot, soapy water after use as well as between preparing raw and ready-to-eat foods (i.e bread, salads, ham, cooked chicken). Raw foods like uncooked chicken and mince carry bugs. If these are transferred to foods that are ready-to-eat people can get sick.

Where possible, have two sets of knives and boards; one set for raw food and another for ready-to-eat food.



Clean the floors, benches and all equipment after use. If there is an extended time between using the kitchen, then cleaning before use may be necessary.



## Hāngi Basket Preparation

Te whakareri i ngā rourou kōpaki mo te hāngi

Line the baskets with tinfoil before putting the raw meat and vegetables into them.

Place meat and vegetables in a single layer ready for cooking - then cover with more tinfoil.



**NB** Ensure all food is thoroughly defrosted before starting the cooking process.

Thaw frozen raw meat, including chicken, in the fridge and do not leave it sitting at room temperature – this is to prevent bacteria from multiplying.

## Preparation of Kaimoana

### Te taka kaimoana

To keep shellfish alive, keep them wet at a steady temperature of 5-7°C. Mussels will keep for four days at this temperature.

Fresh kaimoana removed from their shells will keep in a fridge for two days and in a freezer for up to three months.

Cooked kaimoana will keep in a fridge for up to two days and in a freezer for up to three months.

**NB Always use a clean chilly bin with fresh, clean ice packs when transporting kaimoana.**



## Hāngi Pit Preparation

### Te whakareri i te pokorua mo te hāngi

The size of the hāngi pit will depend on the number of baskets of food that need to be cooked.

These dimensions are appropriate for 3-4 hāngi baskets (1m x 0.75m) stacked no more than two baskets high. They should be used as a guideline and scaled up to accommodate more baskets as required. Dimensions are approximate only.

Hāngi Pit Preparation

Elevation view point

(Figure 1)



Cross section

(Figure 2)



## Steps to be Taken Before Lighting the Hāngi

### Ngā mahi i mua i te tahunga o te hāngi

#### STEP 1

Place dry paper and kindling in the bottom of the hāngi pit.

#### STEP 2

Place three layers of mānuka logs on top of the dry paper and kindling.

#### STEP 3

Select enough stones or iron bars to completely cover the base of the hāngi pit and place carefully on top of the mānuka logs.



# Heating of the Hāngi Stones

## Te whakawera o ngā kōhatu mo te hāngi

Heat the hāngi stones for a minimum of three hours until white hot (iron bars until red hot) – **this is to ensure they are hot enough to thoroughly cook the food. Thorough cooking kills any bacteria and viruses.**



### STEP 4

Firing of the hāngi pit.



### STEP 5

Final stages of burning mānuka logs.



### STEP 6

Remove red hot embers and ash from hāngi pit (this reduces the excessive smoky taste in the food).



### STEP 7

Place hot embers and ash on a corrugated iron sheet and remove from the hāngi pit to a safe place. Hose the embers and ash to cool.

**NB Supervise the fire at all times.**

## Placing of Hāngi Baskets in Hāngi Pit

Te whakanoho o ngā rourou kōpaki ki roto i te pokorua mo te hāngi

### STEP 8

Carefully place the hāngi baskets on top of the hot stones, stacking no more than two baskets high and ensuring that the baskets containing meat are on the bottom layer.



### STEP 9

Place the wet cloth sheet(s) over the hāngi baskets.



### STEP 10

Place the clean wet sacks over the wet sheet.

**NB** Wet sheets and numerous sacks create the steam required to cook the food. More water can be used if necessary. However, it should be applied sparingly as too much water can cool the stones too quickly, which can result in undercooked food.



### STEP 11

Place a tarpaulin cover over the entire hāngi pit and place soil around the edges of the tarpaulin to seal in the steam.

**NB** Once the hāngi pit has been sealed it must be supervised throughout the cooking time (2.5-3 hours). This safety measure is to make sure that no steam escapes from the pit (escaping steam = escaping heat). If steam leakage occurs, seal with soil immediately.





## Removing Hāngi Baskets after Cooking

Te tango o ngā rourou kōpaki mai i te pokorua hāngi

### STEP 12

After 2.5-3 hours, carefully remove the soil from the edges of the tarpaulin. Carefully roll the tarpaulin away from the hāngi pit.



### STEP 13

Carefully remove the sacks one by one from the hāngi pit.



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### STEP 14

Carefully remove the large white cloth sheet.

**NB** When removing the tarpaulin, sacks and sheets ensure that soil does not fall into baskets.



### STEP 15

Remove the hāngi baskets from the hāngi pit and take them to the kitchen.

## Serving the Food Te whakarato kai

Serve the food hot and as soon as possible after cooking or keep it hot in a hot holding unit (bain marie) – **this prevents the small number of bugs which may have survived the cooking from growing to dangerous levels.**

- If using a bain marie, make sure it is preheated before placing food into it.
- Food in bain maries should be maintained at a minimum temperature of 60°C.

Keep ready-to-eat foods (seafood, cold meats and salads) covered in the fridge until ready for serving. When serving cold ready-to-eat foods without cooling units or heated foods without bain maries, do not allow the food to sit at room temperature for longer than 2 hours.

Keep the food covered **AT ALL TIMES** including right up until it is served. This prevents flies touching the food and also stops hair, dirt etc from getting into the food by accident.



## Leftover Food

### Ngā toenga kai

It is important to cool leftover food quickly.

This can be done by:

- putting the food onto open trays
- slicing large pieces of meat
- stirring regularly (for soups, boil ups).

It is important that chilly bins with ice packs are used when taking leftover food away – this is to prevent the bacteria multiplying.

**Leftover food should be kept in the fridge and used within two days or thrown out. If reheating the food, ensure it is thoroughly reheated until it is steaming hot.**



**Time-temperature abuse** occurs when people leave prepared food sitting at room temperature for long periods. This gives bacteria time to multiply to numbers that make people sick. Another example is failing to cool food quickly after it has been cooked, and then putting it in the fridge. Both situations encourage the growth of bacteria.

**Post-cooking contamination** can occur when cooked food is contaminated by using dirty hands, utensils, cutting boards, or bench surfaces.

# Safe Drinking Water Waiora

Water used for drinking, hand washing, food preparation and cooking needs to be free from harmful bacteria and chemicals. If your water comes from a mains supply (**urban Marae**), your local authority monitors it to ensure it is safe.

## Rural Water Supplies (Rural Marae and households)

Tank water will, at times, become contaminated with harmful bacteria from birds and other animals. If you have a tank collecting rainwater off the roof or natural water (streams or lakes) the following are ways to keep your water safe:

- Water from streams should not be used for drinking water without filtration and disinfection.
- **Include a first flush diverter** (a device that prevents the first water collected from carrying any debris into the collection tank). Place on the pipe directly from the roof if you have older tank(s).
- **Use plastic pipes.**
- **Do not have exposed tanalised timber** anywhere on the roof as chemicals can enter the water supply.

- **Beware of lead-based paint** on the roof that can contaminate the water.
  - Check the old paint for lead through your public health service, and if you are painting the roof choose paint that the manufacturer advises is safe for roof water systems.
- **Make sure the water tank is secure** from animals, birds and other debris entering.
- **Clean the roof at least six monthly** and spouting three monthly by scrubbing with water, after disconnecting the pipe entering the tank.
- **Clean and disinfect your tank at least every 12 months.** This can be done if you need to fill up during a dry spell. Flush the tank out with water, using a broom to push sludge out through the scour valve. After cleaning and filling, disinfect the tank water by adding 33 ml of household bleach (4% chlorine ) per 1000L. The usual tank volume is 22,500L (5000 gal) and requires 750 ml of bleach.
- **Consider installing a disinfection system** such as ultraviolet or disinfecting with chlorine on a regular basis.

Contact your local authority's Environmental Health Officer or Health Protection Officer of your local Public Health Service for advice on your water system.

## Food Preparation

If there is no system for disinfecting the water, it is recommended that boiled water be used for cleaning activities, drinking, for washing fruit and vegetables, and for cooking.

## III Food Handlers

### Ngā kaimahi e mauīui ana

#### Gastrointestinal Infections

Vomiting or diarrhoea are important symptoms of viral or bacterial gut infection. A list of germs that frequently cause foodborne illness are shown below. A food handler who is infected, can infect others through touching food. It is most important that anyone who has these symptoms be excluded from the kitchen and from handling or preparing food. If any symptoms are severe or persist, the person should see a doctor. Anyone who has suffered symptoms of vomiting or diarrhoea in the previous week, which has settled, should tell the kitchen manager/kaiwhakahaere or the chief cook and be reminded of the importance of good hand hygiene practice, in particular thorough hand washing and drying (refer to page 9).

#### Skin and other Infections

Food handlers with infected sores on exposed skin (hands, face, neck or scalp) can transfer bacteria to food and cause illness in those who eat it. Anyone with inflamed, weeping or discharging wounds or sores should be excluded from the kitchen until they are completely healed. Clean wounds must be totally covered with a brightly coloured waterproof dressing but there is no need for the food handler to be excluded. Those with infected sores on non-exposed skin, e.g. the back or legs, can work with kai, however the importance of careful hand washing and drying should be stressed. Any food handler whose eyes, ears, mouth or gums are weeping or discharging must be excluded from food handling until they are better. Those with a persisting sore throat and no other respiratory symptoms such as a runny nose or cough may have a streptococcal throat infection and should be referred to a doctor.

## Common Foodborne Illness Bacteria

### Ngā moroiti e pātahi ana ki te kai

**It is important to follow food safety practices to prevent food poisoning. The following are examples of common food poisoning bacteria and how they affect people:**

- ***Campylobacter***  
Incubation period:  
Usually 2 to 5 days, can be 1 - 10 days  
Symptoms: Muscle pain, headache and fever, followed by bloody diarrhoea, abdominal pain and nausea.
- ***Salmonella***  
Incubation period: 12 hours to 3 days  
Symptoms: Diarrhoea, abdominal cramps, vomiting, nausea and fever (lasting 1 to 7 days).
- ***Staphylococcus aureus***  
Incubation period: 30 mins to 7 hours  
Symptoms: Usually nausea, vomiting and abdominal cramps maybe followed by diarrhoea (lasting 1 to 2 days).
- ***Bacillus cereus (Vomiting type)***  
Incubation period: 1 to 6 hours  
Symptoms: Nausea and vomiting, sometimes followed by diarrhoea (lasting less than 1 day).
- ***Bacillus cereus (Diarrhoea type)***  
Incubation period: 10 to 12 hours  
Symptoms: Abdominal cramps, watery diarrhoea, and sometimes nausea (lasting less than 1 day).
- ***Clostridium perfringens***  
Incubation period: 8 to 16 hours  
Symptoms: Watery diarrhoea with severe abdominal cramps (lasting 24 hours or less).

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# Public Health Units Ngā wāhanga hauora ā iwi

For further advice on infections and food handling contact a Health Protection Officer at your local Public Health Unit:

## Auckland DHB

Private Bag 92 605  
Auckland  
(09) 262 1855

## Choice Health

Private Box 58  
Masterton  
(06) 378 9029

## Crown Public Health

Private Box 443  
Greymouth  
(03) 768 1160

## Crown Public Health

PO Box 1475  
Christchurch  
(03) 379 9480

## Crown Public Health

Private Box 510  
Timaru  
(03) 688 6019

## Hawke's Bay DHB

PO Box 447  
Napier  
(06) 834 1815

## Health Waikato

PO Box 505  
Hamilton  
(07) 838 2569

## Hutt Valley DHB

Private Bag 31 907  
Lower Hutt  
(04) 570 9002

## MidCentral Health

Private Bag 3003  
Wanganui  
(06) 348 1775

## MidCentral Health

Private Box 2056  
Palmerston North  
(06) 350 9110

## Nelson Marlborough DHB

Private Box 647  
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## Nelson Marlborough DHB

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## Pacific Health

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